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**CATHETER DEVICES AND METHODS FOR THEIR USE IN THE
TREATMENT OF CALCIFIED VASCULAR OCCLUSIONS**

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ABSTRACT OF THE DISCLOSURE

Catheter devices and methods for their use in enhancing fluid flow through a vascular site occupied by a vascular occlusion are provided. The subject catheter devices include at least a first, second and third lumen, where: (a) the first lumen is used for delivery of an acidic dissolution solution to the vascular site; (b) the second lumen is used for delivery of a buffer solution to the vascular site; and (c) the third lumen is used for removal of fluid from the vascular site. In many preferred embodiments, the first, second and third lumens are coaxial. In practicing the subject methods, the vascular site is flushed simultaneously with an acidic dissolution fluid and a buffer solution, where flushing is carried out in a manner such that only a surface of the vascular occlusion is contacted with the acidic dissolution fluid and the remainder of the vascular site is not contacted with fluid having a pH that is lower than about 4. Flushing is carried out in this manner for a period of time sufficient for fluid flow through the vascular site to be enhanced, e.g. increased or established. The subject catheter devices and methods find use in the treatment of a variety of different vascular diseases characterized by the presence of calcified vascular occlusions, including peripheral and coronary vascular diseases.

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